

DARREN A. LYTLE

U.S. Environmental Protection Agency
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Education

Ph.D., Environmental Engineering
University of Illinois at Champaign-Urbana, Champaign, Illinois, December
19, 2005
Advisor: Prof. Vernon Snoeyink
Dissertation: "The Effect of Water Chemistry on Iron Particles and
Suspensions"

Master of Science, MS, Environmental Engineering
University of Cincinnati, Cincinnati, Ohio, 1991
Advisor: Prof. R. Scott Summers
Thesis: "Removal of Beryllium from Drinking Water by Chemical
Coagulation and Lime Softening"

B.S., Civil Engineering
University of Akron, Akron, Ohio, 1990

Registration

Professional Engineer, Ohio, No. E-61725

Experience

U.S. Environmental Protection Agency (EPA)
Office of Research and Development (WSWRD)
Treatment Technology Evaluation Branch (TTEB)
Water Supply and Water Resources Division
26 W. Martin Luther King Dr.
Cincinnati, Ohio 45268

Supervisory Environmental Engineer (Branch Chief, Acting) (May 2012 to present). See below for duties.

Environmental Engineer (GS-14 National Expert) (March 2012 to May 2012).
See below for duties.

Supervisory Environmental Engineer (Branch Chief, Acting) (March 2010 to March 2012). Oversees and manages Branch within WSWRD's Treatment, Technology and Evaluation Branch (TTEB). Branch consists as many as twenty-four federally-employed engineers, chemists, and technicians. The Branch conducts drinking research in support of the development of new and previously promulgated Federal drinking water standards. Serves as first line supervisor for a staff of engineers, scientist and technicians. Provides direction, guidance, advice and assistance to Branch staffing all administrative matters and in technical matters, as appropriate; sets priorities for Branch products within research plans; assigns staff, evaluated performance; resolves complaints and disputes within the Branch; handles appropriate personnel actions and issues, including recommending promotions, approving leave and interviewing and recommending candidates for positions within the Branch.

Environmental Engineer (GS-14 National Expert) (June 2009 to March 2010). See below for duties.

Supervisory Environmental Engineer (Branch Chief, Detail) (February 2009 to June 2009). Oversees and manages Branch within WSWRD's Treatment, Technology and Evaluation Branch (TTEB). Branch consists of twenty-four federally-employed engineers, chemists, and technicians, and a number of contractors. The Branch conducts drinking research in support of the development of new and previously promulgated Federal drinking water standards.

Environmental Engineer, National Expert (GS-14) (January 2005 to February 2009). Serves as a nationally and Agency recognized researcher on water treatment and distribution system issues including corrosion control, inorganic contaminant and pathogen control, and biological water treatment. Provides extensive research and technical assistance to EPA for the development and implementation of drinking water rules and regulations. Activities include addressing scientific peer panels like the Science Advisory Board with the results of my research, and participating on EPA workgroups and committees that develop guidelines and policies that the Agency issues to the water treatment utilities for achieving safe drinking water. Plans, directs, and participates in an in-house and extramural (grants/contracts) research program focused on corrosion control, inorganic contaminant and pathogen control, and biological water treatment. Research efforts are integrated into WSWRD, Regional and Program goals and needs. As the nationally recognized researcher, author authoritative scientific papers on research results in peer reviewed professional journals and writes chapters in technical manuals and books. Presents results of research at National Conferences, workshops, symposia and meetings. Organizes and moderates sessions at national

conferences, etc., sponsored by various groups on topics of his special expertise. Called upon by other EPA programs, and organizations such as the Office of Water, various Regional Offices to participate in seminars and workshops.

Environmental Engineer (1990 to November 7, 2008). Plan, design, and conduct in-house and field research on the removal and control of inorganic contaminants such as turbidity, metals and radionuclides, and microorganisms from drinking water using treatment strategies such as conventional coagulation and filtration, slow sand filtration, ion exchange, membrane filtration, and lime softening. Also, address residuals management concerns related to water treatment processes. Plan, design, and conduct in-house and field research on corrosion control of drinking water distribution system materials including lead, copper, brass, and iron. Develop and utilize computer programs related to water chemistry modeling, and statistical and graphical analysis of research data collected from corrosion control and water treatment studies. Present and publish research findings in peer reviewed literature, at conferences, and other outlets. Provide technical assistance to other EPA offices, Federal, State, and Local agencies, consultants, and utilities in the water supply industry. Manage Co-operative Agreements and other mechanisms of extramural funding.

Affiliations

Member of American Water Works Association (AWWA), 1991 to present

Member of Sigma Xi Scientific Research Society, 1997 to present

Committees (Outside of EPA)

Journal of the American Water Works Association (Jour. AWWA), member of the Journal's Editorial Board, April 2015 to present.

American Water Works Association Biological Treatment Symposium Planning Committee, 2012.

American Water Works Association Biological Water Treatment Water Quality Committee, Nov. 2008-present.

American Water Works Association Drinking Water Research Division, June 2007-2013.

American Water Works Association Drinking Water Distribution System Research Committee, 2006-present.

American Water Works Association Small Systems Research Committee, 2007 to present.

American Water Works Research Foundation (AWWARF) Project Advisory Committee member on project#4103: Comparison of Zinc vs. Non-zinc Corrosion Control for Lead and Copper, 2007-present

American Water Works Research Foundation (AWWARF) Project Advisory Committee member on project #3109: Copper Pitting Monitoring Techniques, 2005-present

American Water Works Research Foundation (AWWARF) Project Advisory Committee member on project titled: "Long-term Effects of Disinfection Changes on Water Quality", March 2003-2007.

American Water Works Research Foundation (AWWARF) Project Advisory Committee member on project titled: "Optimizing the Generation and Capacity of Adsorptive Sites on Oxide Surfaces for Manganese Control", March 2003-2007.

Chairman of AWWA Research Foundation Distribution System Technical Advisory Workgroup, 2000.

American Water Works Research Foundation (AWWARF) Project Advisory Committee member on project titled: "Post-Optimization of Lead and Copper Control Monitoring Strategies", 2000-2004.

American Water Works Research Foundation (AWWARF) Project Advisory Committee member on project titled: "Process Performance Indicators for Arsenic Removal", 2000-2004.

American Water Works Research Foundation (AWWARF) invited participant on Manganese Research Needs Workshop, Voorhees, New Jersey, January 9-10, 2001.

Standard Methods Committee on revisions to method Section 2120 Color, 1999. Taught graduate level course on drinking water treatment at the University of Cincinnati, 2000.

Peer Reviewer

Journal of Hazardous Waste

Journal of Environmental Engineering

Environmental Science and Technology

Journal of Water Supply: Research and Technology: AQUA

Journal AWWA

Environmental Monitoring and Assessment

Honors and Awards

- 2013 U.S. EPA/ORD Scientific and Technological Achievement Award, Honorable Mention, for the paper "Lead Pipe Scale Analysis Using Broad-Beam Argon Milling to Elucidate Drinking Water Corrosion".
- 2013 U.S. EPA/ORD Scientific and Technological Achievement Award, Honorable Mention, for the paper "Multifunctional Silver Coated E-33/Iron Oxide Water Filters: Inhibition of Biofilm Growth and Arsenic Removal".
- 2011 U.S. EPA achievement award, the Bronze Medal Award for acting as a Project Lead Safe and Sustainable Water Resources (SSWR) under ORD's Strategic Research Action Plans and Research Action Plan Teams
- 2011 U.S. EPA/ORD Scientific and Technological Achievement Award, Level III, for the book chapter: "Chapter 20: Internal Corrosion and Deposition Control Peer-reviewed book. Water Quality and Treatment: A Handbook of Community Water Supplies. Sixth ed. J.K. Edzwald, editor, (2010)"
- 2008 U.S. EPA NRMRL Honor Award "Arsenic Removal Technology Demonstration Project"
- 2000 U.S. EPA achievement award, the Bronze Medal Award, as part of Low Flow Drinking Water Pilot Plant Team.
- 1999 U.S. EPA achievement award, the Bronze Medal Award, for "A method for assaying a microbial surrogate for evaluating drinking water performance".
- 1998 U.S. EPA/ORD Scientific and Technological Achievement Award, Level III, for the paper "Application of Aeration to Reduce Lead and Copper in Waters with Suitable pH and Carbon Dioxide".
- 1997 Awarded an Internal Grant an Investigation, "The Surface Properties of Microbiological Pathogens in Drinking Water".
- 1997 U.S. EPA's highest achievement award, the Gold Medal Award, as part of the "District of Columbia Drinking Water Core Team". Provided technical assistance to the District of Columbia during a bacterial problem within their distribution system.
- 1994 U.S. EPA's highest achievement award, the Gold Medal Award, for investigative work and technical assistance to the City of Milwaukee, WI., during their Waterborne Cryptosporidiosis Outbreak in 1993.

1993 U.S. EPA/ORD Scientific and Technological Achievement Award, Level 1, for the paper "Beryllium Determination in Drinking Water by Graphite Furnace Atomic Absorption Spectroscopy (GFAAS)", *Jour. AWWA*.

1993 U.S. EPA/RREL STAR program publication award for the paper, "Removal of Beryllium by Chemical Coagulation and Lime Softening", *J Water SRT-Aqua*.

1993 U.S. EPA/RREL STAR program publication award for the paper, "Preferential Dissolution of Lead from Solder Particulate Material", *Jour. AWWA*.

Bibliography: Darren A. Lytle

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PEER-REVIEWED PUBLICATIONS

(* denotes corresponding author)

Lytle, D.A.*, Williams, D., Muhlen, M., Pham, M., Kelty, K., Wildman, M., Lang, G., Wilcox, M., and M. Kohne. **An Innovative Biological Ammonia Treatment Process: Pilot to Full-Scale**. Submitted to *Jour AWWA* (May 2015).

Minning, T., **Lytle, D.A.***, Pham, M., and K. Kelty. **Systematic Evaluation of Dissolved Lead Sorption Losses to Particulate Syringe Filter Materials**. Accepted for publication in *Environ. Monitor. Assess.* (May 2015).

(70) White, C.P., Desai, V., Riddick, E., Popovici, J. and **D.A. Lytle. Identification of Arsenic-Oxidizing Bacteria Isolated from Biologically-Active Rapid Sand Filter**. Accepted for publication in: *Systematic and Applied Microbiology*. 2014.

Lytle, D.A., Fox, K., Miltner, R., Speth, T., Schock, M., Kropp, K., Shukairy, H., Fichter, L., Dugan, N., and C. Muhlen. **Water Treatment Pilot Plant Design Manual: The Design of a Low Flow Conventional/Direct Filtration Water Treatment Plant for Drinking Water Treatment Studies**. EPA/600/R-15/045, Office of Research and Development, Cincinnati, Ohio (2015).

Popovici, J., White, C.P., Hoelle, L., and **D.A. Lytle***. **Characterization of the Cell Surface Properties of Drinking Water Pathogens by Microbial Adhesion to Hydrocarbon and Electrophoretic Mobility Measurements.** *Colloids and Surfaces B: Biointerfaces*, 118:126-132 (2014).

White, C., J. Popovici, **D.A. Lytle**, and E. Rice. **Endospore surface properties of commonly used *Bacillus anthracis* surrogates vary in aqueous solution.** *Antonie van Leeuwenhoek*, 106:243-251 (2014).

Lytle, D.A.* and C. White. **The Effect of Phosphate on the Properties of Copper Drinking Water Pipes Experiencing Localized Corrosion.** *J Fail. Anal. and Preven.*, DOI 10.1007/s11668-014-9786-6 (2014).

Copeland, A. and **D.A. Lytle***. **Oxidation-Reduction Potential Measurements of Important Oxidants In Drinking Water.** *Jour. AWWA*, 106:1:E10-E20 (<http://dx.doi.org/10.5942/jawwa.2014.106.0002>) (2014).

Sun, H. S., Shi, B., **Lytle, D.A.**, Bai, Y., Wang, D., and M. Ying. **Formation and Release Behavior of Iron Corrosion Products under the Influence of Bacterial Communities in a Simulated Water Distribution System.** *Environ Sci Process Impacts*, 26:16 (3):576-85 (2014).

Lytle, D.A.*, Sorg, T., Wang, L., and A. Chen. **The Accumulation of Radioactive Contaminants in Drinking Water Distribution Systems.** *Water Research*, 50:1:396-407 (2014).

Daniels, S. L., Sprunger, P. A., Kizilkaya, O., **Lytle D. A.**, and J.C. Garno. **Nanoscale Surface Characterization of Aqueous Copper Corrosion: Effects of Immersion Interval and Orthophosphate Concentration.** *Applied Surface Science*, 285:823-831 (2013).

Lytle, D.A.*, White, C., Williams, D., Koch, L., and E. Nauman. **Innovative Biological Water Treatment for the Removal of Elevated Ammonia.** *Jour. AWWA*, 105:9:E524-E359 (<http://dx.doi.org/10.5942/jawwa.2013.105.0109>) (2013).

Haas, C., Koch, L., Kelty, K., Triantafyllidou, S., and **D.A. Lytle***. **Effectiveness of the Preservation Protocol within EPA Method 200.8 for Soluble and Particulate Lead Recovery in Drinking Water.** U.S. EPA, Office of Research and Development, Cincinnati, Ohio, EPA/600/R-13/222 (2013)

Lytle, D.A.*, White, Williams, D., Koch, L., and E. Nauman. **Innovative Biological Water Treatment for the Removal of Elevated Ammonia.** *Jour. AWWA*, 105:9:E524-E359 (<http://dx.doi.org/10.5942/jawwa.2013.105.0109>) (2013).

Yeuell, H.D., Dvorak, B.I., P.L. Gurian, and **D.A. Lytle**. **Committee Report: Getting**

Information to Small Systems: Information Dissemination Survey of Engineers and Regulators. *Jour. AWWA*, 105(1):51-59 (2013).

Henrie, T., Rezania, L.W., Nagy, D, and **D.A. Lytle**. **Got Ammonia?** *AWWA OPFLOW* (2012).

White, C., Popovici, J., **Lytle, D.A.**, Adcock, N., and E.W. Rice. **Effect of pH on the Electrophoretic Mobility of Surrogate Spores of *Bacillus anthracis* in Aqueous Solutions.** *Appl. Environ. Microbiol.*, 78(23):8470 (2012).

Lytle, D.A.*, White C., Williams, D., Koch, L., and E. Nauman. **Summary Report: Results from the Pilot Study of an Innovative Biological Treatment Process for the Removal of Ammonia from a Small Drinking Water System in Iowa.** U.S. EPA, Office of Research and Development, Cincinnati, Ohio, EPA/600/R-12/655 (2012).

White, C.P., DeBry, R.W., and **D.A. Lytle**. **Microbial Ecology of a Full-Scale Biologically Active Filter for Drinking Water Treatment.** *Appl. Environ. Microbiol.*, 78(17):6390 (2012).

Nadagouda, M.N., Bennett-Stamper, C., White, C., and **D.A. Lytle**. **Multifunctional Silver Coated E-33/Iron Oxide Water Filters: Inhibition of Biofilm Growth and Arsenic Removal.** *RSC Advances*, 2:4198–4204 (2012).

Blute, N, Ghosh, A., and **D.A. Lytle**. **Assessing Ammonia Treatment Options.** *Opflow Online*, American Water Works Association, Denver, CO, 38(5):14-17 (2012).

Lytle, D.A.*, Williams, D., and C. White. **A Simple Approach to Assessing Copper Pitting Corrosion Tendencies and Developing Control Strategies.** *Jour. Wat. Supply: Res. and Tech.:AQUA*, 61(3):164-175 (2012).

Grace, S., **Lytle, D.A***, and M. N. Goltz. **Control of New Copper Corrosion in High-Alkalinity Drinking Water Using Orthophosphate.** *Jour. AWWA*, 104:1:E15-E25 (2012).

White, C., Tancos, M., and **D.A. Lytle**. **Microbial Community Profile of a Lead Pipe Removed from a Drinking Water Distribution System.** *Appl. Environ. Microbiol.*, 77:15:5557-5561 (2011).

Nadagouda, M.N., Cruz, C., and **D.A. Lytle**. **Microwave-Assisted Combustion Synthesis of Nano Iron Oxide/Iron-Coated Activated Carbon, Anthracite, Cellulose Fiber and Silica, with Arsenic Adsorption Studies.** *Journal of Nanotechnology*, vol. 2011, Article ID 972486, 8 pages, 2011. doi:10.1155/2011/972486 (2011).

Lewendowski, B.R., Lusker, K.L., LeJeune, Z.M., **Lytle, D.A.**, Zhou, P., Sprunger, P.T., and J.C. Garino. **Impact of pH, Dissolved Inorganic Carbon, and Polyphosphates for the Initial Stages of Water Corrosion of Copper Surfaces.** *Chem.*, 1:1:16-26 (2011).

Branhuber, P., De Haan, M., Lemieux, F., and **D.A. Lytle**. **Recent Research Every Utility Manager Needs to Know About: Rethinking Ammonia Removal Technologies.** *Jour. AWWA*, 103:1:48-59 (2011).

Nadagouda, M. N., White, C., and **D.A. Lytle**. **Lead Pipe Scale Analysis Using Broad-Beam Argon Ion Milling to Elucidate Drinking Water Corrosion.** *Micro. and Microanal.*, 17, 284–291, (Feb. 2011).

Turek, N.F., Kasten, L., **Lytle, D.A.***, and M.N. Goltz. **Impact of Plumbing Age on Copper Levels in Tap Water.** *Jour. Wat. Supply: Res. and Tech.:AQUA*, 60:1:1–15 (2011).

Lewandowski, B., **Lytle, D.A.**, and J.C. Garno. **Nanoscale Investigation of the Impact of pH and Orthophosphate on the Corrosion of Copper Surface in Water.** *Langmuir*, 26:18:14671-14679 (2010).

Lytle, D.A.*, White, C., and M.N. Nadagouda. **A Comprehensive Investigation of Copper Pitting Corrosion in Drinking Water Distribution System.** *Corrosion Science*, 52:6:1927-1938 (2010).

Lytle, D.A.*, Sorg, T.J, Muhlen, C., and L. Wang. **Particulate Arsenic Release in a Drinking Water Distribution System.** *Jour. AWWA*, 102:3:87-98 (2010).

Lytle, D.A.*, M.R. Schock and K. Sheckel. **The Inhibition of Pb(IV) Oxide Formation in Chlorinated Water by Orthophosphate.** *Env.Sci.&Tech*, 43:17:6624-6631 (July, 2009).

Nadagouda, M., Schock, M., Metz, D. H., Desantis, M., **Lytle, D.A.** and M.M. Welch. **Effect of Phosphate Inhibitors on the Formation of Lead Phosphate/Carbonate Nanorods, Microrods and Dendritic Structures.** *Crystal Growth & Design*, 9:4:1798-1805 (2009).

Lytle, D.A.*, White, C., M. N. Nadagouda, and A. Worrall. **Crystal and Morphological Phase Transformation of Pb(II) to Pb(IV) in Chlorinated Drinking Water.** *Journal of Hazardous Materials*, 165:1:1234-1238 (2009).

Lytle, D.A.*, White, C., and M.R. Schock. **The Synthesis of Lead Pyrophosphate, $P_2P_2O_7$, in Water.** *Micro. and Microanal.*, 14:4:335-341 (2008).

Lytle, D.A.* and M.R. Schock. **Pitting Corrosion of Copper in High pH and Low Alkalinity Waters.** *Jour. AWWA*, 100:3:115-128 (2008).

Lytle, D.A.*, Chen, A.S., Sorg, T.J., Phillips, S. and K. French. **Biological As(III) Oxidation in Water Treatment Plant Filters.** *Jour. AWWA*, 99:12:72-86 (2007).

Lytle, D.A.*, Sorg, T.J., Wang, L., Muhlen, C., Rahrig, M., and K. French. **Biological Nitrification in Full-Scale and Pilot-Scale Iron Removal Drinking Water Treatment Plant Filters.** *Jour. Wat. Supply: Res.and Tech.:AQUA*, 56:2:125-136 (2007).

Copeland, R.C., **Lytle, D.A.***, and D.D. Dionysiou. **Desorption of Arsenic from Drinking Water Distribution System Solids.** *Environ. Monit. Assess.*, 127:523-535 (On-line Issn. 0167-6369, Oct. 11, 2006) (2007).

Creed, P.A., Gallawa, C.M., Young, A.R., Schwegel, C.A., **Lytle, D.A.**, Sorg, T.J., and J.T. Creed. **Investigation of Sequential and Enzymatic Extraction of Arsenic from Drinking Water Distribution System Solids using ICP-MS.** *J. Environ. Monit.*, 8:968-972 (2006).

Burlingame, G.A., **Lytle, D.A.**, and V.L. Snoeyink. **Red Water: Understanding Iron Release.** *Opflow*, 32:12 (2006).

Hoffman, G.L. **Lytle, D.A.**, Sorg, T.J., Chen, A.S.C., and L. Wang. **Design Manual: Removal of Arsenic from Drinking Water Supplies by Iron Removal Process.** U.S. EPA, Office of Research and Development, Cincinnati, Ohio, EPA/600.R-06/030 (2006).

Lytle, D.A.* and M.R. Schock. **Formation of Pb(IV) Oxides in Chlorinated Water.** *Jour. AWWA*, 97:11:102-114 (2005).

Schock, M.R., **Lytle, D.A.**, Sandvig, A.M., Clement, J., and S.H. Harmon. **Replacing Polyphosphates with Silicate to Solve Lead, Copper, and Source Water Iron Problems.** *Jour. AWWA*, 97(11):84 (2005).

Lytle, D.A.*, Gerke, T.L., and J.B. Maynard. **Effect of Bacterial Sulfate Reduction on Iron-corrosion Scales.** *Jour. AWWA* 97:10:109-120 (2005).

Lytle, D.A.*, Sorg, T.J., and V.L. Snoeyink. **Optimizing Arsenic Removal During Iron Removal: Theoretical and Practical Considerations.** *Jour. Wat. Supply: Res.and Tech.:AQUA*, 54:545-560 (2005).

Lytle, D.A.*, Sorg, T.J., and C. Frietch. **The Accumulation of Arsenic in Drinking Water Distribution Systems.** *Env.Sci.&Tech.* 38:20:5365-5372 (2004).

Lytle, D.A.*, Frietch, C., and T. Covert. **The Electrophoretic Mobility of Mycobacterium avium Complex (MAC) Organisms in Water.** *Appl. Environ. Microbiol.*, 70:9:5667-5671 (2004).

Lytle, D.A.* and V.L. Snoeyink. **The Effect of Oxidant on the Properties of Fe(III) Particles and Suspensions Formed from the Oxidation of Fe(II).** *Jour. AWWA*, 96:8:112-124 (2004).

Lytle, D.A.*, Sarin, P. and V.L. Snoeyink. **The Effect of Chloride and Orthophosphate on the Release of Iron from a Drinking Water Distribution System Cast Iron Pipe.** *Jour. Wat. Supply: Res.and Tech.:AQUA*, 54:5:267-281 (2004).

Sarin, P., Snoeyink, V. L., **Lytle, D. A.** and W.M. Kriven. **Iron Corrosion Scales: Model for Scale Growth, Iron Release and Colored Water Formation.** *Jour. Environ. Eng.*, 130: 64-373 (2004).

Lytle, D.A.* and V.L. Snoeyink. **The Effect of Dissolved Inorganic Carbon on the Properties of Iron Colloidal Suspensions.** *Jour. Wat. Supply: Res.and Tech.:AQUA*, 52:3:165-180 (2003).

Lytle, D.A.* and V.L. Snoeyink. **Effect of Ortho- and Polyphosphates on the Properties of Iron Particles and Suspensions.** *Jour. AWWA*, 94:10:87-99 (2002).

Lytle, D.A.*, Johnson, C.H., and E.W. Rice. **A Systematic Comparison of the Electrokinetic Properties of Environmentally Important Microorganisms in Water.** *Colloids and Surfaces B:Biointerfaces*, 24:91-101 (2002).

Magnuson, M.L., **Lytle, D.A.**, Frietch, C.M., and C.A. Kelty. **Characterization of Submicrometer Aqueous Iron(III) Colloids Formed in the Presence of Phosphate by Sedimentation Field Flow Fractionation with Multiangle Laser Light Scattering Detection.** *Anal. Chem.*, 2001, 73, 4815-4820.

Sarin, P., Bebee, J., Beckett, M.A., Jim, K.K., **Lytle, D.A.**, Clement, J.A., Kriven W.M., and V. L. Snoeyink. **Mechanism of Release of Iron from Corroded Iron/Steel Pipes in Water Distribution Systems,** *Corrosion & Materials*, 26:3 (2001).

Lytle, D.A.* and M.R. Schock. **Impact of Stagnation Time on Metal Dissolution from Plumbing Materials in Drinking Water.** *Jour. Wat. Supply: Res.and Tech.:AQUA*, 49:10:243-257 (2000).

Lytle, D.A.*, Rice, E.W., Johnson, C.H., and K.R. Fox. **Electrophoretic Mobility of *Escherichia coli* 0157:H7 and Wild-Type *Escherichia coli* Strains.** *Appl. Environ. Microbiol.*, 65:7:3222-3225 (1999).

Sorg, T.J., Schock, M.R., and **D.A. Lytle.** **Ion Exchange Softening: Effects on Metal Concentrations.** *Jour. AWWA*, 91:8:85-97 (1999).

Lytle, D.A.* and M.R. Schock. **The Use of Aeration for Corrosion Control.** *Jour. AWWA*, 90:3:74-88 (March, 1998). Erratum, *Jour. AWWA*, 90:5:4 (1998).

Lytle, D.A.* and M.R. Schock. **An Investigation of the Impact of Alloy Composition and pH**

on the Corrosion of Brass in Drinking Water. *Advance in Environmental Research*, 1:2:213 (1997).

Lytle, D.A.*, Schock, M.R., and T.J. Sorg. **Controlling Lead Corrosion in the Drinking Water of a Building by Orthophosphate and Silicate Treatment.** *Jour. NEWWA*, 110:3:202 (1996).

Fox, K.R. and **D.A. Lytle**. **The Milwaukee Cryptosporidiosis Outbreak: Investigation and Recommendations.** *Jour. AWWA*, 88:9:87-94 (1996).

Rice, E.W., Fox, K.R., Miltner, R.J., **Lytle, D.A.**, and C.H. Johnson. **Evaluating Water Treatment Performance Using a Microbial Surrogate System.** *Jour. AWWA*, 88:9:122-130 (1996).

Lytle, D.A.* and M.R. Schock. **Stagnation Time, Composition, pH, and Orthophosphate Effects on Metal Leaching on Brass.** U.S. EPA, Office of Research and Development, Cincinnati, Ohio, EPA/600/R-96/103 (1996).

Schock, M.R., **Lytle, D.A.**, and J.A. Clement. **Effect of pH, DIC, Orthophosphate, and Sulfate on Drinking Water Cuprosolvency.** U.S. EPA, Office of Research and Development, Cincinnati, Ohio, EPA/600/R-95/085 (1995).

Vita_s, A., Gardels, M.C., **Lytle, D.A.**, Schock, M.R., and T.J. Sorg. **Investigation of the Electrochemical Properties of Copper in Potable Water.** *Latvijas Kimijas Zurnals*, 1:66-77 (1994).

Lytle, D.A.*, Schock, M.R., Dues, N., and P. Clark. **Preferential Dissolution of Lead from Solder Particulate Material.** *Jour. AWWA*, 85:7:104-110 (July, 1993).

Lytle, D.A.*, Schock, M.R., Doerger, J.U., and N. Dues. **Beryllium Determination of Beryllium in Drinking Water by Graphite Furnace Atomic Absorption Spectroscopy (GFAAS).** *Jour. AWWA*, 85:2:77-83 (Feb., 1993).

Lytle, D.A.*, Summers, R.S., and T.J. Sorg. **Removal of Beryllium by Chemical Coagulation and Lime Softening.** *Jour. Wat. Supply: Res.and Tech.:AQUA*, 41:6:330-339 (1992).

Sorg, T.J. and **D.A. Lytle**. **Uranium Removed by Ion Exchange.** *Water Environment and Technology*, 4:8:14 (1992).

BOOK CHAPTERS

Schock, M. R. and **D.A. Lytle** (2009). Internal Corrosion and Deposition Control. Water Quality and Treatment: A Handbook of Community Water Supplies. Chapter 20. New York, McGraw-Hill, Inc.: In Review.

Water Dictionary (AWWA2009), Technical Advisory

FACT SHEETS AND SCIENCE BRIEFS

An Innovative Biological Treatment Process for the Removal of Ammonia from a Small Drinking Water System, Latham, M and Lytle, D.A. U.S. Environmental Protection Agency, Cincinnati, OH, ORD EPA/600/F-12/609, Sept. 2012.

A Systematic Evaluation of Dissolved Metals Loss During Water Sample Filtration Latham, M. and Lytle, D. (2011). U.S. Environmental Protection Agency, Washington, EPA/600/F-11/029.

Advanced Materials and Solids Analysis Research Core (AMSARC) Fact Sheet, Latham, M. and Lytle, D. (May 2011). U.S. Environmental Protection Agency, Washington, EPA/600/F-11/007.

Impact of Water Chemistry on the Localized Corrosion of Copper Pitting Latham, M. and Lytle, D. (Oct. 2009). U.S. Environmental Protection Agency, Washington, EPA/600/F-09/013.

In-House Copper and Lead Solubility and Corrosion Studies Latham, M. and Lytle, D. (Oct. 2009). U.S. Environmental Protection Agency, Washington, EPA No. 600/F-09/011.

The Effect of Oxidant and Redox Potential on Metal Corrosion in Drinking Water. Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, DC, EPA/600/F-10/003.

Desorption of Arsenic from Drinking Water Distribution System Solids. Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/002.

Assessment of Nitrification in Distribution Systems of Waters with Elevated Ammonia Levels. Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/001, 2010.

The Role of Microbial Processes in the Oxidation and Removal of Arsenic from Drinking Water. Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/008.

The Role of Microbial Processes in the Oxidation and Removal of Ammonia from Drinking Water. Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/007.

Relationship Between Redox Potential, Disinfectant, and pH in Drinking Water. Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/006.

The Effect of Water Chemistry on the Removal of Arsenic from Drinking Water During Iron Removal Treatment Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/005.

The Effect of Water Chemistry on the Release of Iron from Pipe Walls Latham, M. and Lytle, D. (2010). U.S. Environmental Protection Agency, Washington, EPA/600/F-10/004.

NEWSLETTER/ARTICLE

Problems with Pinhole Leaks in Your Copper Water Pipes - Science Matters Newsletter, U.S. Environmental Protection Agency, Volume 2| Number 2 (March/April 2011).

PRESENTATIONS

(* denotes conference-invited speaker, speaker when listed as first author unless otherwise noted)

Dugan, N., Sanan, T., Smith, S., Marsh, R., Mash, H., and **D.A. Lytle**. “USEPA Research Update: Brief Recap- Permanganate Oxidation- Preliminary Results- 2015 Bloom Season Monitoring- Preliminary Plan” Presented at the 2014 Lake Erie Water Treatment Plant Meeting, Avon Lake, OH. March 24, 2015.

Mash, H., Dugan, N., **Lytle, D.A.**, Muhlen, C., Sanan, T., Kelty, K., and M. Pham. “**2013 Lake Erie Cyanobacterial Toxin Sampling Project**” Presented at 2014 Toxicology and Risk Assessment Conference, April 9, 2015.

Mash, H., Dugan, N., **Lytle, D.A.**, Muhlen, C., Sanan, T., Kelty, K., and M. Pham. “2013 Lake Erie Cyanobacterial Toxin Sampling Project” Presented at 2014 Toxicology and Risk

Assessment Conference, April 9, 2015.

Lytle, D.A.*, Triantafyllidou, and C. Muhlen. Maintaining Water Quality in Building Plumbing Systems. Ohio AWWA Safe Drinking Water Act Seminar. Columbus, Ohio Dec. 8, 2014.

Schock, M.R. and **D.A. Lytle. Demystifying Copper Corrosion.** 133rd NEWWA Annual Conference, Rockport, Maine Sept. 21-24, 2014.

Lytle, D.A., Williams, D., Muhlen, C., Pham, M., M. Wildman. **Advances in Biological Treatment: Pilot to Full-Scale.** 11th Annual U.S. EPA Small Systems Drinking Water Workshop: Small Systems Challenges and Solutions. Cincinnati, OH Sept. 9-11, 2014.

Dugan, N., Mash, H., **Lytle, D.A.**, Muhlen, C., Sanan, T., Kelty, K., and M. Pham. **Cyanobacterial Cells and Toxins: Evaluating Source Water Trends and Propagation through Lake Erie Treatment Facilities.** 11th Annual U.S. EPA Small Systems Drinking Water Workshop: Small Systems Challenges and Solutions. Cincinnati, OH Sept. 9-11, 2014.

Triantafyllidou, S., Lytle, D.A., Rodgers, M, Muhlen, C., Elk, M., Boczek, L., Hoelle, J., Pfaller, S., and J. Santo Domingo. **ORD Research on Building Water Quality.** 11th Annual U.S. EPA Small Systems Drinking Water Workshop: Small Systems Challenges and Solutions. Cincinnati, OH Sept. 9-11, 2014.

O'Donnell, A. and **D.A. Lytle. Effect of Conventional Drinking Water Treatment on Strontium Removal.** 2014 Ohio WEA/AWWA Joint Conference, Columbus, OH Aug. 26-29, 2014.

Dugan, N., Mash, H., **Lytle, D.A.**, Muhlen, C., Sanan, T., Kelty, K., and M. Pham. **Emerging Issues for Source Water: Cyanobacterial Cells and Toxins: Evaluating Source Water Trends and Propagation through Lake Erie Treatment Facilities.** 2014 Ohio WEA/AWWA Joint Conference, Columbus, OH Aug. 26-29, 2014.

Triantafyllidou, S., Lytle, D.A., Rodgers, M, Muhlen, C., Elk, M., Boczek, L., Hoelle, J., Pfaller, S., and J. Santo Domingo. **Challenges in Maintaining Drinking Water Quality at Hospitals and Other Large Buildings.** 2014 Ohio WEA/AWWA Joint Conference, Columbus, OH Aug. 26-29, 2014.

Daniels, Stephanie, **Lytle, D.A.**, and S. Harmon. **A Visual Insight into the Degradation of Metals in Drinking Water Distribution Systems Using AFM.** American Water Works Annual Conference. Boston, MA. June 11, 2014.

Wildman, M and **D.A. Lytle. Innovative Biological Ammonia Treatment for Small Systems: Pilot to Full-Scale.** American Water Works Annual Conference. Boston, MA. June 10, 2014.

O'Donnell, A.J. and **D.A. Lytle**. **Full-Scale and Bench-Scale Studies on the Removal of Strontium from Water**. American Water Works Annual Conference. Boston, MA. June 11, 2014.

Triantafyllidou, S., **Lytle, D. A.**, Rodgers, M., Pfaller, S., Santo-Domingo, J., and L. Boczek. **Water Quality Monitoring in a Hospital.** American Water Works Annual Conference. Boston, MA. June 9, 2014.

Lytle, D. A., Triantafyllidou, S., Botkins, J., and T. Sorg. **Release of Contaminants from Distribution System Materials to Drinking Water: Mechanisms and Case Studies.** American Water Works Annual Conference. Boston, MA. June 9, 2014.

***Lytle, D.A.**, *et al.* **"Small Water Systems and Disinfection Technologies."** Legionella Disease Prevention in the Healthcare Setting Strategy Workshop, Washington, D.C., Dec. 3-4, 2013.

Radabaugh, Z., Werth, T., Kohne, M., and **D.A. Lytle**. **Copper and Lead Corrosion in a Full-Scale Home Plumbing System Simulation.** Poster, 10th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. September 10-12, 2013.

Lytle, D.A., O'Donnell, A., and T. Sorg. **Emerging Inorganic Contaminants: Strontium, Vanadium, and Others. Presented at Poster,** 10th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. September 10-12, 2013.

Lytle, D.A. and C.White, **"Design & Operational Constraints on Biological Ammonia Treatment"**. Presentation at AWWA Annual Conference, Denver, CO., June 10-13, 2013.

Lytle, D.A. Schock, M.R., and J.Leo, **"The Impact of Orthophosphate on Copper Solubility"**. Presentation at AWWA Annual Conference, Denver, CO., June 10-13, 2013.

Lytle, D.A., White, C., Popovicic, J., and E.W.Rice, **"Elucidating Microbial Cell Attachment/Detachment using Hydrophobicity and Electrokinetic Measurements in Aqueous Systems"**. Presentation at AWWA Annual Conference, Denver, CO., June 10-13, 2013.

Lytle, D.A., Minning, T., Pham, M., and K. Kelty, **"Loss of Dissolved Lead in Drinking Water to Syringe Filters"**. Presentation at AWWA Annual Conference, Denver, CO., June 10-13, 2013.

***Lytle, D.A.**, Williams, D. and C. White, **"Biological treatment for arsenic, ammonia and iron removal"**. Invited presentation at Greene County Sanitary Engineering Training, Xenia, OH., April 16, 2013.

***Lytle, D.A., “Overview of Water Infrastructure Research in SSWR Program”.** Invited presentation at EPA RESEARCH FORUM: Advancing Public Health Protection through Water Infrastructure Sustainability, April 10-11, 2013.

Lytle, D.A., Williams, D. and C. White, “Engineering Design Configurations for Biological Ammonia Removal”. Presentation at AWWA Biological Treatment Symposium, Denver CO., March 28-29, 2013.

Lytle, D.A., White, C. P., Williams, D. and C. Muhlen, “Biological Oxidation of As(III) in a Full-Scale Iron Removal Plant”. Presentation at AWWA Biological Treatment Symposium, Denver CO., March 28-29, 2013.

***Lytle, D.A., “EPA’s Drinking Water Distribution System Research”.** Chinese Research Academy of Environmental Sciences (CRAES)- U.S. EPA Workshop on Water Environmental Protection and Management Workshop, Beijing, China, Feb. 4, 2013.

***Lytle, D.A., “EPA Iron Corrosion and Release Research Update”** Presented at 2013 joint Chinese Academy of Sciences (CAS)-RCEES- U.S. Environmental Protection Agency Workshop on Drinking Water Quality and Distribution Safety, Beijing, China, Feb. 2, 2013.

***Lytle, D.A. “Ammonia Removal from Small Drinking Water Systems”.** Presentation at 2012 9th Annual U.S. EPA ORD/OGWD and ASDW Small System Drinking Water Workshop. Cincinnati, OH. Sept. 11-13, 2012.

Liggett J. and **Lytle D. “Arsenic Adsorption on a Cast Iron Pipe Section”** Poster, 9th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. September 11-13, 2012.

Lytle, D.A. “Ammonia Removal from Small Drinking Water Systems” 9th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. September 11-13, 2012.

White, C. P., D. A. Lytle, D. Williams, and C. Muhlen. **“Oxidation of Ammonia in Source Water Using Biological Filtration”** (slides). In Proceedings, Water Quality Technology Conference and Exposition, Phoenix, AZ, November 13 - 17, 2011. American Water Works Association, Denver, CO, #1747, (2011).

Lytle, D.A., and J. Liggett. “Arsenic Accumulation and Release Studies Using a Cast Iron Pipe Section” Water Quality Technology Conference and Exposition. American Water Works Association, Denver, CO, Phoenix, AZ, November 13 - 17, 2011.

Liggett J. and **Lytle D. “Impact of pH, Oxidant Demand, and Phosphate on Copper Release and Corrosion”.** Poster 8th Annual U.S. EPA Drinking Water Workshop: Treatment and Distribution System Compliance Challenges. Cincinnati, OH. August 30-31, 2011.

DeHaan, M., McAfee, C., and **D.A. Lytle**. “**Evaluation of Park City, Utah's Arsenic, Thallium, Manganese and Mercury Water Quality Events in the Distribution System.**” (poster) AWWA Water Quality Technology Conference. Phoenix, AZ, Nov. 13-16, 2011.

***Lytle, D.A. “EPA Distribution System (DS) Research as it Relates to the TCRDS and the DS Research Partnership....and More.”** AWWA Water Quality Technology Conference. Savannah, GA. Nov. 14-17, 2010 (opening session).

***Lytle, D.A. “Understanding and Controlling Iron Release in Distribution Systems.”** 7th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. August 10-12, 2010.

Liggett, J., Conover, J., and **D.A. Lytle**. “**Impact of pH and DIC on Lead Mineralogy and Solubility in Drinking Water.**” Poster. 7th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. August 10-12, 2010.

Popovici, J., White, C., and **D.A. Lytle**. “**The Use of Bacterial Adherence to Hydrocarbons (BATH) Assay in Evaluation of the Hydrophobic Surface Characteristics of Potential Water Pathogens.**” Poster. 7th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. August 10-12, 2010.

Schroeder, M.F. and **D.A. Lytle**. “**The Adsorption of Arsenic on Iron Pipes in Water Distribution Systems.**” Poster. 7th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. August 10-12, 2010.

Speth, T.F. “**Developing Drinking Water Technology Initiatives.**” Presented by **D.A. Lytle**. 7th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. August 10-12, 2010.

White, C., Popovici, J., and **D.A. Lytle**. “**Biological Oxidation of Ammonia and Arsenic in Pilot-Scale Rapid Sand Filters.**” Poster. 7th Annual U.S. EPA Drinking Water Workshop. Cincinnati, OH. August 10-12, 2010.

***Lytle, D.A. “Dealing with Corrosion in Your Distribution System.”** OKI Groundwater Committee Meeting , Cincinnati, OH, June 2, 2010.

Daniels, S. L.; **Lytle D.A.**; Garno, J.C. “**Effects of pH, Orthophosphates and Exposure Time on the Corrosion of Copper Surfaces Viewed by Atomic Force Microscopy**”, 37th Annual NOBCCHE Conference, Atlanta, GA (3/2010).POSTER

Daniels, S. L.; **Lytle, D. A.**; Garno, J. C. “**Effects of pH, Orthophosphates and Exposure Time on the Corrosion of Copper Surfaces Viewed by Atomic Force Microscopy.**”, 61st Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Best Student Poster Award, Orlando, FL (2/2010).POSTER

Daniels, S. L.; Lytle D.A.; Garno, J.C. **“The effects of Orthophosphate in Drinking Water on the Initial Copper Corrosion using Atomic Force Microscopy”**, American Chemical Society 238th National Meeting, Division of Environmental Chemistry and Sci-Mix, Washington, DC (8/2009). POSTER

***Lytle, D.A. “U.S. EPA Lead and Copper Corrosion Research Program Update.”** NACE WaterCorr Web Series. Jan. 12, 2010.

***Lytle, D.A.** (T. Sorg filled-in to give presentation), **“Accumulation of Trace Contaminants in Drinking Water Distribution Systems.”** Michigan Section AWWA Annual Conference, Traverse City, MI. Sept. 15, 2009.

Daniels, S. L.; Lewandowski B.R.; Lytle D.A.; Garno, J.C. **“Investigation of the Effect of Water Quality on the Initial Development of Corroding Copper by Atomic Force Microscopy”**, American Water Works Association (AWWA) Water Quality Technology Conference, Seattle, WA (11/2009).

Daniels, S.L.; Lewandowski, B.R.; Lytle, D.A.; and J.C. Garno. **“Effect of pH and Orthophosphate Levels of Drinking Water During the Initial Stages of Copper Corrosion Investigated with Atomic Force Microscopy.”** 238th ACS National Meeting, Washington, D.C. Aug. 16-20, 2009.

Lytle, D.A. “The Application of Orthophosphate to Reduce Elevated Copper Levels in a New Building with High DIC Water.” Poster. 2009 AWWA Annual Conference and Exposition. San Diego, CA. June 14-18, 2009.

Lytle, D.A.; Williams, D.; Muhlen, C.; Almassalkhi, B.; C. White. “Consequences and Reduction of Elevated Ammonia in Illinois Groundwaters: U.S. EPA Research Efforts.” ISAWWA/IWEA Meeting, March 16-19, 2009.

***Lytle, D.A. “The Relationship Between Redox Stability, Corrosion, and Metal Release.”** AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008.

***Lytle, D.A. “Additional U.S. EPA Accumulation and Release Studies.”** AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008.

Melton, L. and D.A. Lytle. **“Impact of Water Chemistry on Synthetically Precipitated Copper Particles.”** AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008.

Nadagouda, M.N.; Lytle, D.A.; and M.R. Schock. **“Comparison between Synthesized Lead Particles and Lead Solids Formed on the Surface in Real Drinking Water Distribution Systems.”** Poster. AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20,

2008.

O'Donnell, A. and **D.A. Lytle**. **"The Impact of Hexametaphosphate on Copper Corrosion and Release."** AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008.

Moor, J.; **Lytle, D.A.**; and T.J. Sorg. **"Oxidant Selection for the Treatment of Mn(II), Fe(II) and As(III) in Groundwaters."** Poster. AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008

Williams, D.; **D.A. Lytle**; and Colin White. **"A Simple Approach to Assessing Copper Pitting Corrosion Tendencies and Developing Control Strategies."** Poster. AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008.

Lytle, D.A. **"Practical Tools for Assessing Corrosion Control."** 5th Annual U.S. EPA Treatment and Distribution System Compliance Challenges Workshop. Cincinnati, OH. Aug. 5-7, 2008.

O'Donnell, A. and **D.A. Lytle**. **"Evaluating the Impact of Water Chemistry on Cuprosolvency and Copper Corrosion By-Products Using a Simple Copper Pipe Recirculating Loop."** Poster. 5th Annual U.S. EPA Treatment and Distribution System Compliance Challenges Workshop. Cincinnati, OH. Aug. 5-7, 2008.

Davis, D.; Jones, H.; and **D.A. Lytle**. **"Characterization of Localized Corrosion of Copper Pipes Used in Drinking Water."** Poster. 5th Annual U.S. EPA Treatment and Distribution System Compliance Challenges Workshop. Cincinnati, OH. Aug. 5-7, 2008.

Moor, J. and **D.A. Lytle**. **"A Comparison of Residential Copper Pipes Carrying Hot and Cold Water."** Poster. 5th Annual U.S. EPA Treatment and Distribution System Compliance Challenges Workshop. Cincinnati, OH. Aug. 5-7, 2008.

White, C. and **D.A. Lytle**. **"A Solids Analysis Approach Incorporating Argon Ion Milling to Copper and Lead Pipe Scale Analysis."** Poster. 5th Annual U.S. EPA Treatment and Distribution System Compliance Challenges Workshop. Cincinnati, OH. Aug. 5-7, 2008.

Lytle, D.A.; Worrell, A.; and J. Newton. **"The Impact of Chloride, Sulfate and Bicarbonate on Iron Release from an Old Iron Pipe."** AWWA Annual Conference and Exposition. Atlanta, GA. June 8-12, 2008.

Lytle, D.A. **"Arsenic and Ammonia Related Drinking Water Research in EPA Region V."** EPA R5/PWSS State Directors Meeting. Chicago, IL. April 21, 2008.

Kang, Y.; van Ooij, W.J.; and **D.A. Lytle**. **"Characterization of Corrosion Products by**

Combining Electrochemical and Surface Analyses.” NACE Corrosion Conference. New Orleans, LA. Mar. 26-20, 2008.

White, C. and D.A. Lytle. **“The Effect of Phosphate on the Morphological and Spectroscopic Properties of Copper Drinking Water Pipes Experiencing Localized Corrosion.”** AWWA Water Quality Technology Conference. Charlotte, NC. Nov. 4-8, 2007.

Lytle, D.A.; Muhlen, C.; and B. Almassalkhi. **“Elevated Natural Source Water Ammonia and Nitrification in the Distribution Systems of Four Water Utilities.”** AWWA Water Quality Technology Conference. Charlotte, NC. Nov. 4-8, 2007.

Lytle, D.A.; Chen, A.; Muhlen, C.; Sorg, T.; and K. French. **“Nitrification, and Iron and arsenic Removal in Biologically Active Filters: A Case Study.”** AWWA Water Quality Technology Conference. Charlotte, NC. Nov. 4-8, 2007.

Morris, E. and D.A. Lytle. **“The Accumulation of Radium and Other Radionuclides in Drinking Water Distribution Systems.”** AWWA Water Quality Technology Conference. Charlotte, NC. Nov. 4-8, 2007.

Kang, Y.; van Ooij, W.J.; and D.A. Lytle. **“The Application of Electrochemical and Surface Analysis Approaches to Studying Copper Corrosion in Water: Fundamentals, Limitations and Examples.”** AWWA Water Quality Technology Conference. Charlotte, NC. Nov. 4-8, 2007.

Kang, Y.; van Ooij, W.J.; and D.A. Lytle. **“Study of Copper Corrosion in Drinking Water Using Electrochemical and Surface Analyses.”** 212th Annual Electrochemical Society Meeting. Washington, D.C. Oct. 7-12, 2007.

Lytle, D.A. **“Copper Research Update.”** 2007 U.S. EPA ORD/OGWDW Workshop on Inorganic Contaminant Issues. Cincinnati, OH. Aug. 21-23, 2007.

Lytle, D.A. **“Accumulation of Contaminants in Distribution Systems.”** 2007 U.S. EPA ORD/OGWDW Workshop on Inorganic Contaminant Issues. Cincinnati, OH. Aug. 21-23, 2007.

Moor, J. and D.A. Lytle. **“Biological Filtration for the Nitrification of Excessive Levels of Free Ammonia.”** AWWA Annual Conference and Exposition. Toronto, ON. June 25-28, 2007.

Lytle, D.A., and M.R. Schock. **“Unsolved Problems with Corrosion and Distribution System Inorganics.”** AWWA Annual Conference and Exposition. Toronto, ON. June 25-28, 2007.

Green, C.; Lytle, D.A.; Ho, C.; and M.J. Kiristis. **“Microbial Oxidation of Arsenic: The Potential for Exploitation in Drinking Water Treatment.”** AWWA Annual Conference and Exposition. Toronto, ON. June 25-28, 2007.

Turek, N.F.; Kasten, L.; **Lytle, D.A.**; and M.N. Goltz. 2006. **"Investigation of Copper Contamination and Corrosion Scale Mineralogy in Aging Drinking Water Distribution Systems."** AWWA Annual Conference and Exposition. San Antonio, TX. June 11-15, 2006.

Sorg, T.J. and **D.A. Lytle**. **"Arsenic and Ohio Utilities."** Ohio AWWA Annual Conference. Columbus, OH. Nov. 9, 2006.

Lytle, D.A. **"Nitrification and Arsenic Removal in Biologically Active Filters: A Case Study."** University of Cincinnati, Environmental Engineering and Science Graduate Course Seminar. CEE 676. Cincinnati, OH. Nov. 17, 2006.

Lytle, D.A.; Schock, M.R.; and J. Kempic. **"U.S. EPA Lead and Copper Corrosion, Distribution System Research, and LCR Regulatory Update."** AWWA Water Quality Technology Conference. Denver, CO. Nov. 5-8, 2006.

Lytle, D.A. **"Copper Corrosion Update."** Ohio AWWA SDWA Seminar. Columbus, OH. Nov. 9, 2006.

***Lytle, D.A.** **"Nitrification and Arsenic Removal in Biologically Active Filters: A Case Study."** ASCE Dayton Section Meeting. Dayton, OH. May 18, 2006.

***Lytle, D.A.** (M. Schock filled-in to give presentation) **"Formation of Pb(IV) Oxides in Chlorinated Water."** AWWA Water Quality Technology Conference. Quebec, Canada, Nov. 5-9, 2005.

***Lytle, D.A.** **"The Accumulation and Release of Arsenic from Distribution System Solids."** AWWA CA/NV Section - Fall 2005 Conference. Reno, NV. Oct. 10-15, 2005.

***Lytle, D.A.** **"Iron Removal Processes: Full Scale Experience."** U.S. EPA/NRMRL/WSWRD Workshop on Arsenic Removal from Drinking Water. Cincinnati, OH. Aug. 16-18, 2005.

***Lytle, D.A.** **"Iron Removal Processes: System Modifications for Enhanced Arsenic Removal."** U.S. EPA/NRMRL/WSWRD Workshop on Arsenic Removal from Drinking Water. Cincinnati, OH. Aug. 16-18, 2005.

***Lytle, D.A.** **"Iron Removal Processes: Design of New Systems."** U.S. EPA/NRMRL/WSWRD Workshop on Arsenic Removal from Drinking Water. Cincinnati, OH. Aug. 16-18, 2005.

***Lytle, D.A.** **"Distribution System Issues."** U.S. EPA/NRMRL/WSWRD Workshop on Arsenic Removal from Drinking Water. Cincinnati, OH. Aug. 16-18, 2005.

***Lytle, D.A. "U.S. EPA's Arsenic Treatment Research Demonstration Program."** U.S. EPA Environmental Technologies Verification International Forum. Washington, D.C. July 12, 2005.

***Lytle, D.A. "Copper Pitting Corrosion and Pinhole Leaks: A Case Study."** AWWA Annual Conference and Exposition. San Francisco, CA. June 12-16, 2005.

***Lytle, D.A. "Arsenic Removal Using Adsorption Technologies."** AWWA Annual Conference and Exposition. San Francisco, CA. June 13-16, 2005.

***Lytle, D.A. "Adsorption Technologies."** U.S. EPA OGWDW Arsenic Workshop. Austin, TX. May 23-24, 2005.

***Lytle, D.A. "Reducing Arsenic Levels in Drinking Water During Iron Removal Processes."** U.S. EPA OGWDW Arsenic Workshop. Austin, TX. May 23-24, 2005.

***Lytle, D.A. "Reducing Arsenic Levels in Drinking Water During Iron Removal Processes."** U.S. EPA OGWDW Arsenic Workshop. South Bend, IN. May 12-13, 2005.

***Lytle, D.A. "Reducing Arsenic Levels in Drinking Water During Iron Removal Processes."** U.S. EPA OGWDW Arsenic Workshop. Sacramento, CA. April 28-29, 2005.

***Lytle, D.A. "Reducing Arsenic Levels in Drinking Water During Iron Removal Processes."** U.S. EPA OGWDW Arsenic Workshop. Phoenix, AZ. April 25-26, 2005.

***Lytle, D.A. "Reducing Arsenic Levels in Drinking Water During Iron Removal Processes."** Ohio AWWA Manufacturers Exposition. Wilmington, OH. April 19, 2005.

***Lytle, D.A. (T. Sorg filled-in to give presentation) "The Accumulation of Arsenic in Drinking Water Distribution Systems."** WQA Annual Conference. Las Vegas, NV. Mar. 29-Apr. 2, 2005.

Lytle, D.A. "Geochemistry of Sulfur in Iron Corrosion Scales Found in Drinking Water Distribution Systems." AWWA Water Quality Technology Conference. San Antonio, TX. Nov. 11-14, 2004.

***Lytle, D.A. "Arsenic Removal During Iron Removal."** Webcast Presentation. U.S. EPA Arsenic Rule Webcast. Oct. 20, 2004.

***Lytle, D.A. "Lead and Copper Research Update: Recent Findings and Future Areas of Research."** Ohio AWWA Annual Meeting. Toledo, OH. Sept. 15-17, 2004.

***Lytle, D.A. "Non-uniform Copper Corrosion: Research Update."** AWWARF Project 2927 Expert Meeting: Installation, Condition Assessment and Reliability of Service Lines,

Connections and Fittings. Aug. 24, 2004, Cincinnati, OH.

Lytle, D.A. "Iron Removal for Arsenic Removal." U.S. EPA Workshop on the Design and Operation of Adsorptive Media Processes for the Removal of Arsenic from Drinking Water. Cincinnati, OH. Aug. 10-11, 2004.

***Lytle, D.A. "Studying Distribution System Solids: Approach and Application."** AWWA Annual Conference and Exposition. Orlando, FL. June 13-17, 2004.

***Lytle, D.A. "Arsenic Treatment: Considerations and Case Studies."** Michigan DEQ: Emerging Issues in Water Treatment Meeting. Lansing, MI. May 18, 2004.

Lytle, D.A. and T.J. Sorg. "Optimizing Arsenic Removal During Iron Removal Processes." Inorganic Contaminants Workshop. Reno, NV. Feb. 1-3, 2004.

Copeland, R.C. Dionysiou, D.D. and **D.A. Lytle. "Arsenic Desorption from Distribution System Solids."** Poster Presentation at the 2004 Graduate Student Research/ Scholarship Forum of the University of Cincinnati, Cincinnati, OH., 2004.

Copeland, R.C. **Lytle, D.A.** and D.D. Dionysiou. **"Arsenic Desorption from Distribution System Solids."** Poster Presentation. Student Poster Competition. The 2004 Annual Conference of Ohio American Water Works Association (OAWWA), Toledo, OH, 2004.

Copeland, R.C. **Lytle, D.A.** and D.D. Dionysiou. **"Arsenic Desorption from Drinking Water Distribution System Solids."** Oral Presentation at The 1st International Conference on Environmental Science and Technology, New Orleans, LA., 2005.

Copeland, R.C. **Lytle, D.A.** and D.D. Dionysiou. **"Arsenic Desorption from Drinking Water Distribution Systems and Iron-Based Column Media."** Oral Presentation at the 67th AWWA Ohio Section Annual Conference, Columbus, OH., 2005.

***Lytle, D.A. "Drinking Water Quality Deterioration in Distribution Systems: Colored Water Formation and Its Control."** AWWA Distribution Systems Symposium. Portland, OR. September 28-30, 2003.

***Lytle, D.A. "Arsenic in OH: Considerations and Case Studies."** Ohio AWWA Annual Meeting. Cincinnati, OH. Sept. 21-26, 2003.

***Lytle, D.A. "Application of Models to Drinking Water Distribution System Processes and Their Limitations."** AWWARF Workshop on Distribution System Modeling Research Needs. Voorhees, NJ. Apr. 2-3, 2003.

***Lytle, D.A. "The Effect of Water Chemistry on the Properties of Iron Particles and**

Suspensions.” University of Illinois Student Symposium. Champaign, IL. Dec. 11, 2002.

***Lytle, D.A. “The Presence of Arsenic in Drinking Water Distribution Solids.”** Ohio EPA Arsenic Training Seminar. Columbus, OH. Oct. 16, 2002.

***Lytle, D.A. and V.L. Snoeyink. “Drinking Water Quality Deterioration in the Distribution System: Colored Water Formation and Its Control.”** Florida AWWA Region IV Symposium. Palm Harbor, FL. Sept. 20, 2001.

***Lytle, D.A. and M.R. Schock. “The LCR: What Have We Learned in the Last 10 Years.”** Florida AWWA Region IV Symposium. Palm Harbor, FL. Sept. 20, 2001.

***Lytle, D.A. and M.R. Schock. “Silicates for Corrosion Control.”** NACE Corrosion Conference/2001 Technical Information Exchange ISCX - *Supplemental Treatment of Potable Water in Building Systems*. Houston, TX. March 13, 2001.

Lytle, D.A. “The Effect of Water Chemistry on the Properties of Iron Particles and Iron Suspensions.” AWWA Water Quality Technology Conference. Salt Lake City, UT. Nov. 6-9, 2000.

Lytle, D.A. “The Effect of Fluoride on Conventional Drinking Water Treatment Using Aluminum Sulfate.” Ohio AWWA Annual Conference. Dayton, OH. Sept. 21-22, 2000.

Lytle, D.A. “The Effect of Water Chemistry on the Physical Properties of Iron Colloids and Aqueous Iron Suspensions.” AWWA Distribution Systems Symposium. Denver, CO. June 9-10, 2000.

Lytle, D.A. “The Effect of pH and Bicarbonate Concentration on the Oxygenation of Ferrous Iron in Aqueous Solutions.” AWWA Annual Conference and Exposition. Denver, CO. June 11-15, 2000.

Lytle, D.A. “A Systematic Study on the Surface Charge of Microorganisms in Drinking Water.” AWWA Water Quality Technology Conference. Tampa, FL. Nov. 1-4, 1999.

Lytle, D.A. “The Design of a Mini-scale Conventional/filtration Water Treatment Plant for *Cryptosporidium* Research.” AWWA Annual Conference and Exposition. Dallas, TX. June 21-25, 1998.

Lytle, D.A. “The Use and Reporting of Particle Surface Characteristics Measurements in Drinking Water.” AWWA Water Quality Technology Conference. Denver, CO. Nov. 9-12, 1997.

Lytle, D.A. “The Use of Aerobic Spore-Forming Bacteria for the Evaluation of Water

Treatment Performance.” AWWA Annual Conference and Exposition. Toronto, ON. June 23-27, 1996.

Lytle, D.A. “An Evaluation of the Secondary Effects of Enhanced Coagulation, With Emphasis on Corrosion Control.” U.S. EPA/NEWWA National Conference on Integrating Corrosion Control and Other Water Quality Goals. Cambridge, MA. May 19-21, 1996.

Lytle, D.A. “Evaluation of Corrosion Issues for Nanofiltration Treated Water.” AWWA/U.S. EPA GAC and Membrane Workshop. Cincinnati, OH. March 3-5, 1996.

Lytle, D.A. “A Microbiological Surrogate for Evaluating Treatment Efficiency.” Indiana AWWA Section Conference. Indianapolis, IN. Feb. 19-21, 1996.

Lytle, D.A. “A Microbiological Surrogate for Evaluating Treatment Efficiency.” Ohio AWWA Section Conference. Springfield, OH. Sept. 25, 1995.

Lytle, D.A. “Investigation on Techniques and Control of Building Lead and Copper Corrosion by Orthophosphate and Silicate.” NACE Corrosion Conference. Orlando, FL. Mar. 26-31, 1995.

Lytle, D.A. “The Effect of Composition, pH, and Orthophosphate on the Corrosion of Brass.” Ohio AWWA Annual Conference. Toledo, OH. Sept. 21-23, 1994.

Lytle, D.A. “Experiences with Sodium Silicate in Corrosion Control Studies.” PQ Corp. International Silicate Conference. Valley Forge, PA. July 19-21, 1994.

Lytle, D.A. “Silicates for Simultaneous Fe/Mn Stabilization and Corrosion Control.” PQ Corp. International Silicate Conference. Valley Forge, PA. July 19-21, 1994.

Lytle, D.A. “A Systematic Study on the Control of Lead in a New Building.” ASCE National Conference on Environmental Engineering. Boulder, CO. July 11-13, 1994.

Lytle, D.A. “A Systematic Study on the Control of Lead in a New Building.” AWWA Annual Conference and Exposition. New York, NY. June 19-23, 1994.

Lytle, D.A. “Controlling Copper, Lead and Iron in Small Systems.” 20th Annual U.S. EPA RREL Research Symposium. Cincinnati, OH. Mar. 15-17, 1994.

Lytle, D.A. “Sampling and Design Considerations for Corrosion Control Studies.” NEWWA/U.S. EPA Solutions to Controlling Lead and Copper Corrosion II. Nashua, NH. Nov. 2-3, 1993.

Lytle, D.A. “Impact of pH and Lead Composition on Metal Leaching from Brass

Coupons.” AWWA Annual Conference and Exposition. San Antonio, TX. June 6-10, 1993.

Lytle, D.A. “Metal Corrosion Coupon Study Contamination, Design, and Interpretation Problems.” AWWA Water Quality Technology Conference. Toronto, ON. Nov. 15-19, 1992.

Lytle, D.A. “Application of a Modified Aluminon Method in a Drinking Water Beryllium Removal Study.” AWWA Water Quality Technology Conference. Orlando, FL. Nov. 10-14, 1991.

Lytle, D.A. “Characterization of Wastes (Brines) from a Uranium Removal Plant.” AWWA/Water Pollution Control Joint Residuals Management Conference. Research Triangle Park, NC. Aug. 11-14, 1991.

PROCEEDINGS PUBLICATIONS

Dugan, N., Mash, H., Kelty, K. and **D.A. Lytle**, “**Removal of Pesticides and Inorganic Contaminants in Anaerobic and Aerobic Biological Contactors**”. Presentation at AWWA Biological Treatment Symposium, Denver CO., March 28-29, 2013.

Lytle, D.A., Williams, D. and C. White, “**Engineering Design Configurations for Biological Ammonia Removal**”. Presentation at AWWA Biological Treatment Symposium, Denver CO., March 28-29, 2013.

Lytle, D.A., White, C. P., Williams, D. and C. Muhlen, “**Biological Oxidation of As(III) in a Full-Scale Iron Removal Plant**”. Presentation at AWWA Biological Treatment Symposium, Denver CO., March 28-29, 2013.

White, C. P., **D. A. Lytle**, D. Williams, and C. Muhlen. “**Oxidation of Ammonia in Source Water Using Biological Filtration**” (slides). In Proceedings, Water Quality Technology Conference and Exposition, Phoenix, AZ, November 13 - 17, 2011. American Water Works Association, Denver, CO, #1747, (2011).

Yeuell, H.D.; Dvorak, B.; Gurian, P.; and **D.A. Lytle**. “**Improving Information Dissemination to Consulting Engineers Serving Small Systems: Suggestions Based on National Survey.**” AWWA Annual Conference and Exposition. Chicago, IL. June 20-24, 2010.

Williams, D. and **D.A. Lytle**. “**A Simple Approach to Assessing Copper Pitting Corrosion Tendencies and Developing Control Strategies.**” AWWA Water Quality Technology Conference. Cincinnati, OH. Nov. 16-20, 2008.

Turek, N.F.; Kasten, L.; **Lytle, D.A.**; and M.N. Goltz, 2006. **“Investigation of Copper Contamination and Corrosion Scale Mineralogy in Aging Drinking Water Distribution Systems.”** AWWA Annual Conference and Exposition. San Antonio, TX. June 11-15, 2006.

Lytle, D.A.; Gerke, T.L.; and J.B. Maynard. **“Geochemistry of Sulfur in Iron Corrosion Scales Found in Drinking Water Distribution Systems.”** AWWA Water Quality Technology Conference. San Antonio, TX. Nov. 11-14, 2004.

James, C.N.; Copeland, R.C.; and **D.A. Lytle**. **“Relationships between Oxidation-Reduction Potential, Oxidant, and pH in Drinking Water.”** AWWA Water Quality Technology Conference. San Antonio, TX. Nov. 11-14, 2004.

Sarin, P.; Snoeyink, V.L.; and **D.A. Lytle**. **“Controlling Red Water and Iron Release.”** Abstract. 1st IWA Leading-Edge Conference on Water and Wastewater Technologies. Czech Republic, Prague. May 31-June 3, 2004.

Gutierrez, S.C.; Haught, R.C.; **Lytle, D.A.**; and E.W. Rice. **“Advances in Drinking Water Treatment in the United States.”** NATO Advanced Research Workshop. Dnepropetrovsk, Ukraine. Nov. 19-22, 2003.

Lytle, D.A.; Snoeyink, V.L.; and P. Sarin. **“The Effect of Chloride and Orthophosphate on the Release of Iron from a Drinking Water Distribution System Cast Iron Pipe.”** AWWA Water Quality Technology Conference. Philadelphia, PA. Nov. 2-6, 2003.

Frietch, C.M. and **D.A. Lytle**. **“The Effect of pH, Phosphate and Oxidant Type on the Removal of Arsenic from Drinking Water During Iron Removal.”** AWWA Water Quality Technology Conference. Philadelphia, PA. Nov. 2-6, 2003.

Snoeyink, V.L.; Sarin, P.; and **D.A. Lytle**. **“Iron Release and Colored Water Formation from Iron Scales.”** AWWA Annual Conference and Exposition. Anaheim, CA. June 15-19, 2003.

Lytle, D.A. and V.L. Snoeyink. **“The Influence of Oxidant Type on the Properties of Iron Colloids and Suspensions Formed from Ferrous Iron.”** AWWA Water Quality Technology Conference. Seattle, WA. Nov. 10-13, 2002.

Lytle, D.A.; Sorg, T.J.; and C. Frietch. **“The Significance of Arsenic-Bound Solids in Drinking Water Distribution Systems.”** AWWA Water Quality Technology Conference. Seattle, WA. Nov. 10-13, 2002.

Stonesifer, K.; **Lytle, D.A.**; and M.R. Schock. **“Oxidant and Redox Potential Effects on the Corrosion of Distribution System Materials.”** AWWA Water Quality Technology Conference. Seattle, WA. Nov. 10-13, 2002.

Lytle, D.A. and V.L. Snoeyink. **“The Effect of Ortho- and Poly-Phosphates on the Properties of Iron Particles and Suspensions Formed from the Oxygenation of Ferrous Iron.”** AWWA Annual Conference and Exposition. New Orleans, LA. June 16-20, 2002.

Lytle, D.A. and V.L. Snoeyink. **“The Effect of Water Chemistry on the Properties of Iron Particles and Iron Suspensions.”** AWWA Water Quality Technology Conference. Salt Lake City, UT. Nov. 6-9, 2000.

Feld, C.M.; **Lytle, D.A.**; and M.R. Schock. **“The Effect of Fluoride on Conventional Drinking Water Treatment Using Aluminum Sulfate.”** AWWA Water Quality Technology Conference. Salt Lake City, UT. Nov. 6-9, 2000.

Lytle, D.A. and V.L. Snoeyink. **“The Effect of Water Chemistry on the Physical Properties of Iron Colloids and Aqueous Iron Suspensions.”** AWWA Distribution Systems Symposium. Denver, CO. June 9-10, 2000.

Lytle, D.A.; Snoeyink, V.L.; and M.R. Schock. **“The Effect of pH and Bicarbonate Concentration on the Oxygenation of Ferrous Iron in Aqueous Solutions.”** AWWA Annual Conference and Exposition. Denver, CO. June 11-15, 2000.

Sarin, P.; Bebee, J.; Beckett, M.A.; Jim, K.K.; **Lytle, D.A.**; Clement, J.A.; Kriven, W.M.; and V.L. Snoeyink. **“Mechanism of Release of Iron from Corroded Iron/Steel Pipes in Water Distribution Systems.”** AWWA Annual Conference and Exposition. Denver, CO. June 11-15, 2000.

Lytle, D.A.; Snoeyink, V.L.; and M.R. Schock. **“The Effect of pH and Bicarbonate Concentration on the Oxygenation of Ferrous Iron in Aqueous Solutions.”** AWWA Annual Conference and Exposition. Denver, CO. June 11-15, 2000.

Sarin, P.; Bebee, J.; Beckett, M.A.; Jim, K.K.; **Lytle, D.A.**; Clement, J.A.; Kriven, W.M.; and V.L. Snoeyink. **“Mechanism of Release of Iron from Corroded Iron/Steel Pipes in Water Distribution Systems.”** AWWA Annual Conference and Exposition. Denver, CO. June 11-15, 2000.

Lytle, D.A.; Rice, E.W.; Johnson, C.H.; Owens, J.H.; and M.M. Marshall. **“A Systematic Study on the Surface Charge of Microorganisms in Drinking Water.”** AWWA Water Quality Technology Conference. Tampa, FL. Nov. 1-4, 1999.

Lytle, D.A. and M.R. Schock. **“The Significance of “Stagnation Curves” for Lead and Copper, and Water Quality Factors Affecting Them.”** 118th NEWWA Annual Conference. Burlington, VT. Sept. 19-22, 1999.

Lytle, D.A. **“Corrosion Control in Distribution Systems.”** U.S. EPA 6th National Drinking

Water and Wastewater Treatment Technology Transfer Workshop. Kansas City, MO. Aug. 2-4, 1999.

Dugan, N.R.; Fox, K.R.; Miltner, R.J.; and **D.A. Lytle**. **“Control of *Cryptosporidium* Oocysts by Steady State Conventional Treatment.”** AWWA Annual Conference and Exposition. Chicago, IL. June 20-24, 1999.

Sarin, P.; Jim, K.; **Lytle, D.A.**; Beckett, M.A.; Kriven, W.M.; Snoeyink, V.L.; and J.A. Clement. **“Systematic Study of Corrosion Scales and Their Release of Iron Particles in Drinking Water.”** AWWA/U.S. EPA Particle Measurement and Characterization in Drinking Water Treatment Symposium. Nashville, TN. March 28-30, 1999.

Beckett, M.; Snoeyink, V.L.; Jim, K.; Sarin, P.; **Lytle, D.A.**; Kriven, W., and J. Clement. **“A Pipe Loop System for Evaluating Iron Uptake in Distribution Systems.”** AWWA Water Quality Technology Conference. San Diego, CA. Nov. 1-5, 1998.

Fox, K.R.; Dugan, N.R.; Miltner, R.J.; **Lytle, D.A.**; Williams, D.J.; Parrett, C.J.; Feld, C.M.; Owens, J.H.; Rice, E.W.; and C.H. Johnson. **“Comparative Removal of *Cryptosporidium parvum* and Surrogates in a Low-Flow Pilot Plant System.”** AWWA Water Quality Technology Conference. San Diego, CA. Nov. 1-5, 1998.

Schock, M.R.; Clement, J.; **Lytle, D.A.**; Sandvig, A.M.; and S.M. Harmon. **“Replacing Polyphosphate with Silicate to Solve Problems with Lead, Copper, and Source Water Iron.”** AWWA Water Quality Technology Conference. San Diego, CA. Nov. 1-5, 1998.

Lytle, D.A.; Fox, K.R.; Miltner, R.J.; Speth, T.F.; Schock, M.R.; Kropp, K.L.; Shukairy, H.; Fichter, L.; and N. Dugan. **“The Design of a “Mini-scale” Conventional/Filtration Water Treatment Plant for *Cryptosporidium* Research.”** AWWA Annual Conference and Exposition. Dallas, TX. June 21-25, 1998.

Schock, M.R.; Hidmi, L.; Edwards, M.A.; and **D.A. Lytle**. **“The Importance of Metastable Solids in Copper Release.”** Inorganic Contaminants Workshop. San Antonio, TX. Feb. 23-24, 1998.

Lytle, D.A.; Rice, E.W.; Fox, K.R.; Johnson, C.H.; Owens, J.; and J.O. Gerkin. **“The Use and Reporting of Particle Surface Characteristics Measurements in Drinking Water.”** AWWA Water Quality Technology Conference. Denver, CO. Nov. 9-12, 1997.

Larosa-Thompson, J.L.; Scheetz, B.E.; Schock, M.R.; **Lytle, D.A.**; and P.J. Delaney. **“Sodium Silicate Corrosion Inhibitors: Issues of Effectiveness and Mechanism.”** AWWA Water Quality Technology Conference. Denver, CO. Nov. 9-12, 1997.

Lytle, D.A. and M.R. Schock. **“The Impact of Stagnation Time on the Dissolution of Metal**

from Plumbing Materials.” AWWA Annual Conference. Atlanta, GA. June 12-19, 1997.

Lytle, D.A.; Fox, K.R.; Rice, E.W.; Owens, J.; and C.H. Johnson. **“The Use of Aerobic Spore-Forming Bacteria for the Evaluation of Water Treatment Performance.”** AWWA Annual Conference. Toronto, ON. June 23-27, 1996.

Fox, K.R. and **D.A. Lytle.** **“Zeta Potential and Particle Counting for Optimizing Pathogen Removal.”** AWWA Annual Conference and Exposition. Toronto, ON. June 23-27, 1996.

Lytle, D.A.; Schock, M.R.; and R.J. Miltner. **“An Evaluation of the Secondary Effects of Enhanced Coagulation, with Emphasis on Corrosion Control.”** U.S. EPA/NEWWA National Conference on Integrating Corrosion Control and Other Water Quality Goals. Cambridge, MA. May 19-21, 1996.

Lytle, D.A.; Schock, M.R.; Speth, T.; and J. Swertfegger. **“Evaluation of Corrosion Issues for Nanofiltration Treated Water.”** U.S. EPA/AWWA GAC and Membrane Workshop. Cincinnati, OH. Mar. 3-5, 1996.

Lytle, D.A. **“How Do I Run a Proper Jar Test?”** AWWA Water Quality Technology Conference. New Orleans, LA. Nov. 12-16, 1995.

Lytle, D.A.; Schock, M.R.; and J.A. Clement. **“Application and Considerations of Aeration for Corrosion Control.”** AWWA Water Quality Technology Conference. New Orleans, LA. Nov. 12-16, 1995.

Miller, N.T.; Delaney, P.; Schock, M.R.; and **D.A. Lytle.** **“Analytical Issues in Corrosion and Deposition Studies.”** AWWA Water Quality Technology Conference. New Orleans, LA. Nov. 12-16, 1995.

Sorg, T.J.; Schock, M.R.; and **D.A. Lytle.** **“An Evaluation of Ion Exchange Softening on the Leaching of Metals from Household Plumbing Materials.”** AWWA Annual Conference and Exposition. Anaheim, CA. June 18-22, 1995.

Schock, M.R. and **D.A. Lytle.** **“Control of Copper Corrosion of Household Plumbing Materials.”** 21st Annual U.S. EPA RREL Research Symposium. Cincinnati, OH. April 4-6, 1995.

Schock, M.R.; **Lytle, D.A.;** and J.A. Clement. **“Effects of pH, Carbonate, Orthophosphate, and Redox Potential on Cuprosolvency.”** NACE Corrosion Conference. Orlando, FL. March 26-31, 1995.

Lytle, D.A.; Schock, M.R.; and T.J. Sorg. **“Investigation on Techniques and Control of Building Lead and Copper Corrosion by Orthophosphate and Silicate.”** NACE Corrosion

Conference. Orlando, FL. March 26-31, 1995.

Rice, E.W.; Fox, K.R.; Miltner, R.J.; **Lytle, D.A.**; and C.H. Johnson. **"A Microbiological Surrogate for Evaluating Treatment Efficiency."** AWWA Water Quality Technology Conference. San Francisco, CA. Nov. 7-10, 1994.

Schock, M.R. and **D.A. Lytle**. **"The Importance of Stringent Control of DIC and pH in Laboratory Corrosion Studies."** AWWA Water Quality Technology Conference. San Francisco, CA. Nov. 7-10, 1994.

Lytle, D.A. and K.R. Fox. **"Particle Counting and Zeta Potential Measurements for Optimizing Filtration Treatment Performance."** AWWA Water Quality Technology Conference. San Francisco, CA. Nov. 7-10, 1994.

Lytle, D.A.; Miltner, R.J.; Dryfuse, M.J.; Schock, M.R.; and R.S. Summers. **"An Evaluation of the Secondary Effects of Enhanced Coagulation."** AWWA Enhanced Coagulation Research Specialty Workshop. Charleston, SC. Dec. 4-6, 1994.

Fox, K.R. and **Lytle, D.A.** **"Cryptosporidium and the Milwaukee Incident."** ASCE National Conference on Environmental Engineering. Boulder, CO. July, 1994.

Schock, M.R.; **Lytle, D.A.**; and J.A. Clement. **"Modeling Issues of Copper Solubility in Drinking Water."** ASCE National Conference on Environmental Engineering. Boulder, CO. July, 1994.

Clement, J.A.; Schock, M.R.; and **D.A. Lytle**. **“Controlling Lead and Copper Corrosion and Sequestering of Iron and Manganese.”** ASCE National Conference on Environmental Engineering. Boulder, CO. July, 1994.

Fox, K.R. and **D.A. Lytle**. **“Cryptosporidium: The Milwaukee Experience and Relevant Research.”** AWWA Annual Conference and Exposition. New York, NY. June 19-23, 1994.

Lytle, D.A.; Schock, M.R.; and T.J. Sorg. **“A Systematic Study on the Control of Lead in a New Building.”** AWWA Annual Conference and Exposition. New York, NY. June 19-23, 1994.

Lytle, D.A. and J.A. Clement. **“Controlling Copper, Lead and Iron in Small Systems.”** 20th Annual U.S. EPA RREL Research Symposium. Cincinnati, OH. March 15-17, 1994.

Fox, K.R. and **D.A. Lytle**. **“The Milwaukee Cryptosporidiosis Outbreak: Investigation and Recommendations.”** AWWA Water Quality Technology Conference. Miami, FL. Nov. 7-11, 1993.

Lytle, D.A. and M.R. Schock. **“Impact of pH and Lead Composition on Metal Leaching from Brass Coupons.”** AWWA Annual Conference and Exposition. San Antonio, TX. June 6-10, 1993.

Clement, J. and **D.A. Lytle**. **“Considerations for the Use of Polyphosphates and Silicates to Control Lead and Copper Based Corrosion.”** AWWA Annual Conference and Exposition. San Antonio, TX. June 6-10, 1993.

Sorg, T.J.; **Lytle, D.A.**; and M.R. Schock. **“Evaluation of Corrosion Inhibitors to Reduce Lead in the Drinking Water in Buildings.”** 19th Annual U.S. EPA RREL Research Symposium. Washington, D.C. April, 1993.

Lytle, D.A.; Schock, M.R.; and S. Tackett. **“Metal Corrosion Coupon Study Contamination, Design, and Interpretation Problems.”** AWWA Water Quality Technology Conference. Toronto, ON. Nov. 15-19, 1992.

Schock, M.R. and **D.A. Lytle**. **“Corrosion Control Principles and Strategies for Reducing Lead and Copper in Drinking Water Systems.”** WQA Annual Convention. Orlando, FL. March 11-15, 1992.

Lytle, D.A.; George, G.K.; and J.U. Doerger. **“Application of a Modified Aluminon Method in a Drinking Water Beryllium Removal Study.”** AWWA Water Quality Technology Conference. Orlando, FL. Nov. 10-14, 1991.

Sorg, T.J.; Schock, M.R.; and **D.A. Lytle**. **“Evaluating Chemical Treatment to Reduce Lead in a Building: A Case Study.”** AWWA/U.S. EPA National Workshop on Control of Lead and

Copper in Drinking Water. Chicago, IL. Sept. 23-25, 1991.

Sorg, T.J.; **Lytle, D.A.**; Egan, J.; and Z. Zhang. **“Characterization of Wastes (Brines) from a Uranium Removal Plant.”** AWWA/Water Pollution Control Joint Residuals Management Conference. Research Triangle Park, NC. Aug. 11-1